1859MNRAS..19..184D

at once show that the longest diameter of the largest spot occupied two different directions, on the two days, with regard to the smallest of the two principal spots; in point of fact, that the largest spot had so moved in the interim as to bring its longest diameter into a line with the smallest spot, this having apparently changed its position by an independent rotation of its own.

The variations among the smaller spots appear to have been so rapid as to preclude the detection of any rotation among them.

March 4, 1859.

Note on Saturn's Ring. By the Rev. W. R. Dawes.

In the *Monthly Notices* for January last are some remarks by Captain Noble on the appearance of *Saturn's* obscure ring as seen with his excellent 4·2-inch refractor. He describes it as seeming to *dip* under ring B; "having never been able satisfactorily to trace the junction of those portions of it in the ansæ with the part crossing the ball." This seems obviously to arise from the want of more illuminating power than an object-glass of only four and a quarter inches aperture can afford, however perfect its defining power may be. I have on several fine nights during the present apparition of the planet been able, with the 7¼-inch refractor I now have in use, to trace the perfect elliptic outline of the inner edge of the ring C in the ansæ and across the ball, without the slightest break or irregularity: but with a telescope of considerably less illuminating power (only as 1 to 3), the narrow portion of it which is inclosed, as it were, between the ball and the ring B might very probably be overpowered by the incomparably brighter objects in contact with it on each side.

With reference to the curvature of the shadow of the ring on the ball, it may be remarked that when the altitude of the sun above the plane of the ring considerably exceeds that of the earth, the shadow of the ring on the ball is curved in the opposite direction to the edge of the ring, and especially near the edges of the ball. This is most remarkable when the minor axis of the outer ring is not much less than the polar diameter of the ball. The edge of the shadow then falling near the pole the visible curvature is very considerable; but I have never seen it greater on one side of the ball than on the other. The circumstances existing during the earlier part of the present apparition were particularly favourable for the display of this phenomenon, the sun's elevation exceeding that of the earth by considerably more than two degrees, and the edge of the outer ring being only about three seconds from the northern edge of

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1859MNRAS..19..185T

the ball. In both these respects the aspect was far less favourable at the epoch of Captain Jacob's observation in November 1852, from which his excellent picture is drawn. Captain Noble does not give the *date* of his own observation.*

Haddenham, Thame, March 1859.

Observations of Donati's Comet taken at Mussooree in India (Lat. 30° 17′ 19″ N., Long. $5^{\rm h}\,12^{\rm m}\,17^{\rm s}\!\cdot\!7$ E.) By Capt. Tennant, R.E.

(*Extract of a Letter to Professor Piazzi Smyth.*)

Date.		Comet — Star. Diff. R.A.	Comet — Star. Diff. N.P.D.	
1858.	h m s	m s	′ ″	
Oct. 5	19 15 35·6	− 3 58·96	−23 31·3	(*a*)
7	20 1 3·6	− 3 51·45	− 6 4·2	(*b*)
8	19 37 56·1	+ 4 20·74	− 4 19·8	(*c*)
9	19 54 9·0	+ 2 0·93	+22 9·9	(*d*)
10	19 51 15·1	+ 5 13·18	+ 2 23·0	(*e*)
12	19 47 46·2	−11 3·78	−16 26·33	(*f*)

Stars of Comparison.

		App. R.A.	App. N.P.D.	Authority.
		h m s	° ′ ″	
(*a*)	α Boötis	...	...	Nautical Almanac.
(*b*)	ζ ...	...	...	Greenwich (6-year C.)
(*c*)	✱ (6 m.)	14 38 4	78 49 0	
(*d*)	✱ (7 m.)	14 51 33	81 39 0	
(*e*)	✱ (7 m.)	15 1 58	85 34 30	
(*f*)	μ Serpent.	...	...	Greenwich (6-year C.)

Deduced Places of Comet.

		R.A.	N.P.D.
	h m s	h m s	° ′ ″
Oct. 5	19 15 33·6	14 5 13·48	69 41 15·9
7	21 1 3·6	14 30 23·59	75 33 55·8
12	19 47 46·2	15 31 11·50	92 43 16·8

From the three places above determined Captain Tennant computed the following parabolic elements, employing the method given by Sir John Herschel in his article on Astronomy in the *Encyclopædia Metropolitana*:—

Perihelion Passage, Sept. 28	h m 16 16·5	G.M.T.
— Distance	0·575236	
Longitude of Perihelion	° ′ ″ 16 36 4	M. Equinox 1858·0
— Ascending Node	168 25 11	
Inclination	66 20 35	

Motion retrograde.

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* The date of the drawing which accompanied Capt. Noble's paper is 1858, Nov. 19, $13^{\rm h}\,30^{\rm m}$ G.M.T.—Ed.

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